MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2015/2016

BOM2064 –QUALITY AND OPERATIONS MANAGEMENT

(All sections / Groups)

02 JUNE 2016
2.30p.m – 4.30p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages with 5 Questions only.

2. Attempt **FOUR** out of **FIVE** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please print all your answers in the Answer Booklet provided.

QUESTION 1

a) Discuss with example the **FIVE** (5) dimensions of service quality. (10 marks)

b) Describe how the major functional areas of business for manufacturing company interrelate with one another. Illustrate your answer with relevant diagram. (15 marks)

(TOTAL: 25marks)

QUESTION 2

a) The Traffic Department, IPK Melaka handed out the following tickets on a weekend. Prepare a Pareto diagram, for the types of infractions.

Infractions	Tickets
Improper turn	25
Excessive speed	43
Parking violation	20
Expired inspection	12
TOTAL	100

(14 marks)

b) Why would business organisations make the 'make-or-buy' decision? (5 marks)

c) Discuss the **THREE** (3) types of cost of quality. (6 marks)

(TOTAL: 25marks)

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QUESTION 3

a) DWM Engineering manufactures components for electronics. The current process uses 20 workers and produces 200 units per hour. The management is considering changing the process with new methods that increase output to 300 units per hour, but will require 30 workers. Particulars are as follows:

	CURRENT PROCESS	NEW PROCESS
OUTPUT (UNIT/HOUR)	200	300
NUMBER OF WORKERS	20	30
MATERIAL COST/HOUR	RM120	RM150

Workers are paid at a rate of RM15 per hour and overhead is charged at 140% labor cost. Finished switches sell for RM 30 per unit.

i. Calculate the multifactor productivity for the current process. (2 marks)
ii. Calculate the multifactor productivity for the new process. (2 marks)
iii. Determine if the new process should be implemented. Justify your answer. (3 marks)
iv. Based on the operations management strategies, identify and describe **FOUR** (4) operations strategies that are in practice in any organization. (10 marks)

b) List **FOUR** (4) symbols used in flowcharts and discuss how flowchart and process charts be used to study and improve operations? (8 marks)

(TOTAL: 25marks)

QUESTION 4

a) A pharmacy, ProMeds Sdn. Bhd., has been monitoring sales of a certain pain reliever. Daily sales during the last 15 days were:

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number sold	36	38	42	44	48	49	50	49	52	48	52	55	54	56	57

i. Predict the number of requests for day 16 using each these methods
a) Naïve (2 marks)
b) A-four period moving average (2 marks)
c) Exponential smoothing with $\alpha = 0.3$.Use 52 for day 8 forecast. (5 marks)
ii. Which method you suggest using to predict future sales? Why? (3 marks)

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b) What is service blue print? Develop a service blue print for hotel services. (11 marks)

c) Explain the term robust design. (2 marks)

(TOTAL: 25marks)

QUESTION 5

a) Discuss **FIVE** (5) importance of inventory management system? (10 marks)

b) A local distributor for a national tire company expects to sell approximately 9600 steel-belted radial tires of a certain size and tread design next year. Annual carrying cost is RM20 per tire and ordering cost is RM65. Assume, the distributor operates 285 days a year.

i) Determine the economic order quantity? (2 marks)
ii) How many times per year does the store reorder? (2 marks)
iii) What is the length of an order cycle? (4 marks)
iv) What is the total annual cost if the EOQ quantity is ordered? (5 marks)

c) What is two-bin system? (2 marks)

(TOTAL: 25marks)

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RELEVANT EQUATIONS/FORMULAE

1) CL= $\bar{\bar{X}}$, UCL,LCL (X-bar) = $\bar{\bar{X}} \pm A_2\bar{R}$

UCL (R) = $D_4\bar{R}$ LCL (R) = $D_3\ \bar{R}$

No of Observation In sub group n	A2	D3	D4
2	1.88	0	3.27
3	1.02	0	2.57
4	0.73	0	2.28
5	0.58	0	2.11
6	0.48	0	2

2) $UCL_c = \bar{c} + 3\sqrt{\bar{c}}$ $LCL_c = \bar{c} + 3\sqrt{\bar{c}}$

3) $\bar{p}$ = Total No of Defective from All Samples/ (No of Samples X Sample Size)

$Sp = \sqrt{[\bar{p}\,(1-\bar{p})/n]}$

CL= $\bar{p}$

LCL= $\bar{p} - 3Sp$

UCL= $\bar{p} + 3Sp$

4) Capacity Utilization= Capacity Used/ Best Operating Level

5) $r = \dfrac{n\sum XY - [\sum X \sum Y]}{\sqrt{[n\ \sum X^2 - (\sum X^2)][n\ \sum Y^2 - (\sum Y)^2]}}$

$a = \bar{Y} - b\bar{X}$ $b = \dfrac{n\sum xy - \sum x \sum y}{n\sum_x 2 - (\sum_x)2}$

6) Exponential smoothing

Forecast for the month *t*: $Ft = Ft - 1 + \alpha\ (A_{t-1} - F_{t-1})$

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7) Inventory Management:

EOQ= $Q* = \sqrt{\frac{2DS}{H}}$ $TC = \frac{Q}{2}H + \frac{D}{Q}S$

EPQ= $Q_0 = \sqrt{\frac{2DS}{H}}\sqrt{\frac{p}{p-u}}$ $I_{max} = \frac{Q}{p}(p-u)$ $TC = \frac{I_{max}}{2}H + \frac{D}{Q}S$

$SS = z(\sigma d)\sqrt{LT}$ $ROP = \bar{d}(LT) + z(\sigma d)\sqrt{LT}$

8) Lean Operations: $N = \frac{DT\ (1+X)}{C}$

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